CHAPTER 33-10-13
TRANSPORTATION OF RADIOACTIVE MATERIAL

33-10-13-01. Purpose and scope. The rules in this chapter establish requirements for packaging, preparation for shipment, and transportation of radioactive material and apply to any person who transports radioactive material or delivers radioactive material to a carrier for transport. To ensure compatibility with international transportation standards, all limits in this chapter are given in terms of dual units: The international system of units (SI) followed by United States customary units. The United States customary units are not exact equivalents, but are rounded to a convenient value, providing a functionally equivalent unit.

History: Effective June 1, 1992; amended effective May 1, 1998; March 1, 2003.
General Authority: NDCC 28-32-02
Law Implemented: NDCC 28-32-02

33-10-13-02. Definitions. As used in this chapter, the following definitions apply:

1. "Carrier" means any person engaged in the transportation of passengers or property by land or water as a common, contract, or private carrier, or by civil aircraft.

2. "Certificate holder" means a person who has been issued a certificate of compliance or other package approval by the United States nuclear regulatory commission.

3. "Close reflection by water" means immediate contact by water of sufficient thickness for maximum reflection of neutrons.

4. "Closed transport vehicle" means a transport vehicle equipped with a securely attached exterior enclosure that during normal transportation restricts the access of unauthorized individuals to the cargo space containing the radioactive material. The enclosure may be either temporary or permanent but must limit access from top, sides, and ends. In the case of packaged materials, it may be of the "see-through" type.

5. "Containment system" means the assembly of components of the packaging intended to retain the radioactive material during transport.

6. "Conveyance" means:

   a. For transport by public highway or rail: any transport vehicle or large freight container;

   b. For transport by water: any vessel, or any hold, compartment, or defined deck area of a vessel including any transport vehicle on board the vessel; and

   c. For transport by aircraft: any aircraft.

7. "Exclusive use" means the sole use of a conveyance by a single consignor and for which all initial, intermediate, and final loading and unloading are carried out in accordance with the direction of the consignor or consignee. The consignor and the carrier must ensure that any loading or unloading is performed by personnel having radiological training and resources appropriate for safe handling of the consignment. The consignor must issue specific instructions, in writing, for maintenance or exclusive use shipment controls, and include them with the shipping paper information provided to the carrier by the consignor.

8. "Fissile material" means any plutonium-238, plutonium-239, plutonium-241, uranium-233, uranium-235, or any combination of these radionuclides. Unirradiated natural uranium and depleted uranium, and natural uranium or depleted uranium that has been irradiated in thermal reactors only are not included in this definition. Department jurisdiction extends only to special nuclear material if quantities are not sufficient to form a critical mass as defined in chapter 33-10-01 of this article.

9. "Fissile material package" means a fissile material packaging together with its fissile material contents.

10. "Low specific activity (LSA) material" means radioactive material with limited specific activity that satisfies the descriptions and limits set forth below. Shielding materials surrounding the low specific activity material may not be considered in determining the estimated average specific activity of the package contents. Low specific activity material must be in one of three groups:

    a. Low specific activity-I (LSA-I).

        (1) Ores containing only naturally occurring radionuclides (e.g., uranium, thorium) and uranium or thorium concentrates of such ores; or

        (2) Solid unirradiated natural uranium or depleted uranium or natural thorium or their solid or liquid compounds or mixtures; or

        (3) Radioactive material, other than fissile material, for which the A_2 value is unlimited; or

        (4) Mill tailings, contaminated earth, concrete, rubble, other debris, and activated material in which the radioactive material is essentially uniformly distributed, and the average specific activity does not exceed one millionth of the A_2 per gram.

    b. Low specific activity-II (LSA-II).

        (1) Water with tritium concentration up to eight-tenths of a terabecquerel per liter [20.0 curies/liter]; or

        (2) Material in which the radioactive material is distributed throughout, and the average specific activity does not exceed one ten thousandths of an A_2 per gram for solids and gases, and one hundred thousandths of an A_2 per gram for liquids.

    c. Low specific activity-III (LSA-III). Solids (e.g., consolidated wastes, activated materials) in which:

        (1) The radioactive material is distributed throughout a solid or a collection of solid objects, or is essentially uniformly distributed in a solid compact binding agent, such as concrete, bitumen, ceramic, etc.;

(2) The radioactive material is relatively insoluble, or it is intrinsically contained in a relatively insoluble material, so that, even under loss of packaging, the loss of radioactive material per package by leaching, when placed in water for seven days, would not exceed one-tenth of an A_2; and

(3) The average specific activity of the solid does not exceed two thousandths of an A_2 per gram.

11. "Maximum normal operating pressure" means the maximum gauge pressure that would develop in the containment system in a period of one year under the heat condition specified in 10 CFR 71.71(c)(1), in the absence of venting, external cooling by an ancillary system, or operational controls during transport.

12. "Normal form radioactive material" means radioactive material which has not been demonstrated to qualify as special form radioactive material.

13. "Optimum interspersed hydrogenous moderation" means the presence of hydrogenous material between packages to such an extent that the maximum nuclear reactivity results.

14. "Rules of the United States department of transportation" means the regulations in 49 CFR parts 100-189.

15. "Specific activity" of a radionuclide means the radioactivity of a radionuclide per unit mass of that nuclide. The specific activity of a material in which the radionuclide is essentially uniformly distributed is the radioactivity per unit mass of the material.

16. "Transport index" means the dimensionless number, rounded up to the first decimal place, placed on the label of a package to designate the degree of control to be exercised by the carrier during transportation. The transport index is determined as follows:

a. For nonfissile material packages, the number determined by multiplying the maximum radiation level in millisievert (mSv) per hour at one meter [3.3 feet] from the external surface of the package by one hundred (equivalent to the maximum radiation level in millirem per hour at one meter [3.3 feet]); or

b. For fissile material packages, the number determined by multiplying the maximum radiation level in millisievert per hour at one meter [3.3 feet] from the external surface of the package by one hundred (equivalent to the maximum radiation level in millirem per hour at one meter [3.3 feet]), or, for criticality control purposes, the number obtained as described in 10 CFR 71.59, whichever is larger.

17. "Type A quantity" means a quantity of radioactive material, the aggregate radioactivity of which does not exceed A_1 for special form radioactive material or A_2 for normal form radioactive material, where A_1 and A_2 are given in appendix A of this chapter or may be determined by procedures described in appendix A of this chapter.

18. "Type B package" means a Type B packaging together with its radioactive contents. A Type B package design is designated as B(U) or B(M). B(U) refers to the need for unilateral approval of international shipments; B(M) refers to the need for multilateral approval. There is no distinction made in how packages with these designations may be used in domestic transportation. To determine their distinction for international transportation, refer to 49 CFR part 173. A Type B package approved prior to September 6, 1983, was designated only as Type B. Limitations on its use are specified in section 33-10-13-08.

19. "Type B packaging" means a packaging designed to retain the integrity of containment and shielding when subjected to the normal conditions of transport and hypothetical accident test conditions set forth in 10 CFR part 71.

20. "Type B quantity" means a quantity of radioactive material greater than a Type A quantity.

History: Effective June 1, 1992; amended effective May 1, 1998; March 1, 2003.
General Authority: NDCC 28-32-02
Law Implemented: NDCC 28-32-02

33-10-13-03. Requirement for license. No individual may transport radioactive material or deliver radioactive material to a carrier for transport except as authorized in a general or specific license issued by the department or as exempted in section 33-10-13-04.

History: Effective June 1, 1992.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-04. Exemptions for low-level materials.

1. Common and contract carriers, freight forwarders, and warehousemen which are subject to the requirements of the United States department of transportation in 49 CFR 170 through 189 or the United States postal service in the postal service manual (Domestic Mail Manual), section 124.3 incorporated by reference, 39 CFR 111.11 (1974), and the United States postal service are exempt from the requirements of this chapter to the extent that they transport or store radioactive material in the regular course of their carriage for others or storage incident thereto. Common and contract carriers who are not subject to the requirements of the United States department of transportation

or United States postal service are subject to section 33-10-13-03 and other applicable requirements of this article.

2. A licensee is exempt from the requirements of this chapter with respect to shipment or carriage of a package containing radioactive material having a specific activity not greater than seventy becquerels per gram [0.002 microcurie per gram].

History: Effective June 1, 1992; amended effective May 1, 1998; March 1, 2003.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-05. Transportation of licensed material.

1. Each licensee who transports licensed material outside the site of usage, as specified in the department license, or where transport is on public highways, or who delivers licensed material to a carrier for transport, shall comply with the applicable requirements of the United States department of transportation regulations in 49 CFR parts 170 through 189 appropriate to the mode of transport.

   a. The licensee shall particularly note United States department of transportation regulations in the following areas:

      (1) Packaging–49 CFR part 173: subparts A and B and I.

      (2) Marking and labeling–49 CFR part 172: subpart D, sections 172.400 through 172.407, sections 172.436 through 172.440, and subpart E.

      (3) Placarding–49 CFR part 172: subpart F, especially sections 172.500 through 172.519, 172.556, and appendices B and C.

      (4) Accident reporting–49 CFR part 171: sections 171.15 and 171.16.

      (5) Shipping papers and emergency information–49 CFR part 172: subparts C and G.

      (6) Hazardous material employee training–49 CFR part 172: subpart H.

      (7) Hazardous material shipper/carrier registration–49 CFR part 107: subpart G.

   b. The licensee shall also note United States department of transportation regulations pertaining to the following modes of transportation:

(1) Rail–49 CFR part 174: subparts A through D and K.

(2) Air–49 CFR part 175.

(3) Vessel–49 CFR part 176: subparts A through F and M.

(4) Public highway–49 CFR part 177 and parts 390 through 397.

2. If United States department of transportation regulations are not applicable to a shipment of licensed material, the licensee shall conform to the standards and requirements of the United States department of transportation specified in subsection 1 to the same extent as if the shipment or transportation were subject to United States department of transportation regulations.

History: Effective June 1, 1992; amended effective May 1, 1998; March 1, 2003.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-06. General licenses for carriers.

1. A general license is hereby issued to any common or contract carrier not exempt under section 33-10-13-04 to receive, possess, transport, and store radioactive material in the regular course of their carriage for others or storage incident thereto, provided the transportation and storage is in accordance with the applicable requirements, appropriate to the mode of transport, of the United States department of transportation insofar as such requirements relate to the loading and storage of packages, placarding of the transporting vehicle, and incident reporting. Any notification of incidents referred to in those United States department of transportation requirements must be filed with, or made to, the department.

2. A general license is hereby issued to any private carrier to transport radioactive material, provided the transportation is in accordance with the applicable requirements, appropriate to the mode of transport, of the United States department of transportation insofar as such requirements relate to the loading and storage of packages, placarding of the transporting vehicle, and incident reporting. Any notification of incidents referred to in those United States department of transportation requirements must be filed with, or made to, the department.

3. Individuals who transport radioactive material pursuant to the general licenses in subsection 1 or 2 are exempt from the requirements of

chapters 33-10-04.1 and 33-10-10 to the extent that they transport radioactive material.

History: Effective June 1, 1992; March 1, 2003.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-07. General license - Approved packages.

1. A general license is hereby issued to any licensee of the department to transport, or to deliver to a carrier for transport, licensed material in a package for which a license, certificate of compliance, or other approval has been issued by the United States nuclear regulatory commission.

2. This general license applies only to a licensee who:

   a. Has a copy of the specific license, certificate of compliance, or other approval of the package and has the drawings and other documents referenced in the approval relating to the use and maintenance of the packaging and to the actions to be taken prior to shipment;

   b. Complies with the terms and conditions of the license, certificate, or other approval, as applicable, and the applicable requirements of this chapter;

   c. Prior to the licensee's first use of the package, has registered with the United States nuclear regulatory commission; and

   d. Has a quality assurance program that meets the applicable requirements of 10 CFR 71, subpart H and is approved by the department or the United States nuclear regulatory commission.

3. The general license in subsection 1 applies only when the package approval authorizes use of the package under this general license.

4. For previously approved Type B packages which are not designated as either B(U) or B(M) in the certificate of compliance, this general license is subject to additional restrictions of section 33-10-13-08.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-08. General license - Previously approved Type B packages.

1. A Type B package previously approved by the United States nuclear regulatory commission, but not designated as B(U) or B(M) in the certificate of compliance, may be used under the general license of section 33-10-13-07 with the following additional conditions:

a. Fabrication of the packaging was satisfactorily completed before August 31, 1986, as demonstrated by application of its model number in accordance with United States nuclear regulatory commission regulations;

b. A package used for a shipment to a location outside the United States is subject to multilateral approval, as defined in 49 CFR 173.403; and

c. A serial number that uniquely identifies each packaging which conforms to the approved design is assigned to, and legibly and durably marked on, the outside of each packaging.

2. A Type B(U) package, a Type B(M) package, a low specific activity (LSA) material package or a fissile material package, previously approved by the United States nuclear regulatory commission but without the designation "-85" in the identification number of the United States nuclear regulatory commission certificate of compliance, may be used under the general license of section 33-10-13-07 with the following additional conditions:

a. Fabrication of the package is satisfactorily completed by April 1, 1999, as demonstrated by application of its model number in accordance with subsection 4 of section 33-10-13-14;

b. A package used for a shipment to a location outside the United States is subject to multilateral approval as defined in 49 CFR 173.403; and

c. A serial number that uniquely identifies each packaging which conforms to the approved design is assigned to, and legibly and durably marked on, the outside of each packaging.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-09. General license - Specification container.

1. A general license is issued to any licensee of the department to transport, or to deliver to a carrier for transport, licensed material in a specification container for a Type B quantity of radioactive material as specified in 49 CFR parts 173 and 178.

2. This general license applies only to a licensee who has a quality assurance program that meets the applicable requirements of 10 CFR 71, subpart H and is approved by the department or the United States nuclear regulatory commission.

3. This general license applies only to a licensee who:

   a. Has a copy of the specification; and

   b. Complies with the terms and conditions of the specification and the applicable requirements of this chapter.

4. The general license in subsection 1 is subject to the limitation that the specification container may not be used for a shipment to a location outside the United States, except by multilateral approval, as defined in 49 CFR 173.403.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-10. General license - Use of foreign approved package.

1. A general license is issued to any licensee of the department to transport, or to deliver to a carrier for transport, licensed material in a package the design of which has been approved in a foreign national competent authority certificate which has been revalidated by the United States department of transportation as meeting the applicable requirements of 49 CFR 171.12.

2. This general license applies only to international shipments.

3. Except as otherwise provided in this section, the general license applies only to a licensee who has a quality assurance program that meets the applicable requirements of 10 CFR 71, subpart H and is approved by the department or the United States nuclear regulatory commission.

4. This general license applies only to a licensee who:

   a. Has a copy of the applicable certificate, the revalidation, and the drawings and other documents referenced in the certificate relating to the use and maintenance of the packaging and to the actions to be taken prior to shipment; and

   b. Complies with the terms and conditions of the certificate and revalidation and with the applicable requirements of this chapter. With respect to the quality assurance provisions of 10 CFR 71, subpart H, the licensee is exempt from design, construction, and fabrication considerations.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-11. General license - Fissile material, limited quantity per package.

1. A general license is hereby issued to any licensee to transport fissile material, or to deliver fissile material to a carrier for transport, if the material is shipped in accordance with this section.

2. This general license applies only to a licensee who has a quality assurance program that meets the applicable requirements of 10 CFR 71, subpart H and is approved by the department or the United States nuclear regulatory commission.

3. This general license applies only when a package contains no more than a Type A quantity of radioactive material, including only one of the following:

   a. Up to forty grams of uranium-235;

   b. Up to thirty grams of uranium-233;

   c. Up to twenty-five grams of the fissile radionuclides of plutonium, except that for encapsulated plutonium-beryllium neutron sources in special form, an A_1 quantity of plutonium may be present; or

   d. A combination of fissile radionuclides in which the sum of the ratios of the amount of each radionuclide to the corresponding maximum amounts in subdivisions a, b, and c of this subsection does not exceed unity.

4. a. Except as specified in subdivision b of this subsection this general license applies only when a package containing more than fifteen grams of fissile radionuclides is labeled with a transport index not less than the number given by the following equation:

$$\text{Minimum Transport Index} = \frac{(0.4x + 0.67y + z)(1 - 15)}{x+y+z}$$

   where the package contains x grams of uranium-235, y grams of uranium-233, and z grams of the fissile radionuclides of plutonium.

   b. For a package in which the only fissile material is in the form of encapsulated plutonium-beryllium neutron sources in special form, the transport index based on criticality considerations may be taken as 0.026 times the number of grams of the fissile radionuclides of plutonium in excess of fifteen grams.

c. In all cases, the transport index must be rounded up to one decimal place and may not exceed ten.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-12. General license - Fissile material, limited moderator per package.

1. A general license is issued to any licensee to transport fissile material, or to deliver fissile material to a carrier for transport, if the material is shipped in accordance with this section.

2. This general license applies only to a licensee who has a quality assurance program that meets the applicable requirements of 10 CFR 71, subpart H and is approved by the department or the United States nuclear regulatory commission.

3. This general license applies only when all of the following requirements are met.

   a. The package contains no more than a Type A quantity of radioactive material.

   b. Neither beryllium nor hydrogenous material enriched in deuterium is present.

   c. The total mass of graphite present does not exceed seven and seven-tenths times the total mass of uranium-235 plus plutonium.

   d. Substances having a higher hydrogen density than water are not present, except that polyethylene may be used for packing or wrapping.

   e. Uranium-233 is not present, and the amount of plutonium does not exceed one percent of the amount of uranium-235.

   f. The amount of uranium-235 is limited as follows:

      (1) If the fissile radionuclides are not uniformly distributed, the maximum amount of uranium-235 per package may not exceed the value given in the following table:

Table 1	
Uranium enrichment in weight percent of uranium-235 not exceeding	Permissible maximum grams of uranium-235 per package
24	40
20	42
15	45
11	48
10	51
9.5	52
9	54
8.5	55
8	57
7.5	59
7	60
6.5	62
6	65
5.5	68
5	72
4.5	76
4	80
3.5	88
3	100
2.5	120
2	164
1.5	272
1.35	320
1	680*
0.92	1200*

* Pursuant to the department's agreement with the United States nuclear regulatory commission, jurisdiction extends only to three hundred fifty grams of uranium-235.

(2) If the fissile radionuclides are distributed uniformly, the maximum amount of uranium-235 per package may not exceed the value given in the following table:

Table 2	
Uranium enrichment in weight percent of uranium-235 not exceeding	Permissible maximum grams of uranium-235 per package
4	84
3.5	92
3	112
2.5	148
2	240
1.5	560*
1.35	800*

* Pursuant to the department's agreement with the United States nuclear regulatory commission, jurisdiction extends only to three hundred fifty grams of uranium-235.

g. The transport index of each package based on criticality considerations is taken as ten times the number of grams of uranium-235 in the package divided by the maximum allowable number of grams per package in accordance with table 1 or 2 above as applicable.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-13. Fissile material - Assumptions as to unknown properties. When the isotopic abundance, mass, concentration, degree of irradiation, degree of moderation, or other pertinent property of fissile material in any package is not known, the licensee shall package the fissile material as if the unknown properties had credible values that would cause the maximum nuclear reactivity.

History: Effective June 1, 1992.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-14. Preliminary determinations. Prior to the first use of any packaging for the shipment of radioactive material:

1. The licensee shall ascertain that there are no defects which could significantly reduce the effectiveness of the packaging;

2. Where the maximum normal operating pressure will exceed thirty-five kilopascal [5 pounds per square inch] gauge, the licensee shall test the containment system at an internal pressure at least fifty percent higher

than the maximum normal operating pressure to verify the capability of that system to maintain its structural integrity at that pressure;

3. The licensee shall determine that the packaging has been fabricated in accordance with the design approved by the United States nuclear regulatory commission; and

4. The licensee shall conspicuously and durably mark the packaging with its model number, gross weight, and a package identification number assigned by the United States nuclear regulatory commission.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-15. Routine determinations. Prior to each shipment of licensed material, the licensee shall determine that:

1. The package is proper for the contents to be shipped;

2. The package is in unimpaired physical condition except for superficial defects such as marks or dents;

3. Each closure device of the packaging, including any required gasket, is properly installed and secured and free of defects;

4. Any system for containing liquid is adequately sealed and has adequate space or other specified provision for expansion of the liquid;

5. Any pressure relief device is operable and set in accordance with written procedures;

6. The package has been loaded and closed in accordance with written procedures;

7. Any structural part of the package which could be used to lift or tie down the package during transport is rendered inoperable for that purpose unless it satisfies design requirements specified by the United States nuclear regulatory commission;

8. The level of removable radioactive contamination on the external surfaces of each package offered for shipment is as low as reasonably achievable, and within the limits specified in 49 CFR 173.443;

9. Except as provided in subsection 10, each package of radioactive materials offered for transportation must be designed and prepared for shipment so that under conditions normally incident to transportation, the radiation level does not exceed two millisieverts per hour

[200 millirems per hour] at any point on the external surface of the package, and the transport index does not exceed ten;

10. A package that exceeds the radiation level limits specified in subsection 9 must be transported by exclusive use shipment only, and the radiation levels for such shipment must not exceed the following during transportation:

    a. Two millisieverts per hour [200 millirems per hour] on the external surface of the package, unless the following conditions are met, in which case the limit is ten millisieverts per hour [1000 millirem per hour]:

        (1) The shipment is made in a closed transport vehicle;

        (2) The package is secured within the vehicle so that its position remains fixed during transportation; and

        (3) There are no loading or unloading operations between the beginning and end of the transportation;

    b. Two millisieverts per hour [200 millirem per hour] at any point on the outer surface of the vehicle, including the top and underside of the vehicle; or, in the case of a flat-bed style vehicle, at any point on the vertical planes projected from the outer edges of the vehicle, on the upper surface of the load or enclosure, if used and on the lower external surface of the vehicle;

    c. One-tenth millisievert per hour [10 millirems per hour] at any point two meters from the outer lateral surfaces of the vehicle (excluding the top and underside of the vehicle); or, in the case of a flat-bed style vehicle, at any point two meters from the vertical planes projected by the outer edges of the vehicle (excluding the top and underside of the vehicle); and

    d. Two hundredths millisieverts per hour [2 millirems per hour] in any normally occupied space, except that this provision does not apply to private carriers, if exposed personnel under their control wear radiation dosimetry devices in conformance with subsection 2 of section 33-10-04.1-09.

11. For shipments made under the provisions of subsection 10, the shipper shall provide specific written instructions to the carrier for maintenance of the exclusive use shipment controls. The instructions must be included with the shipping paper information;

12. The written instructions required for exclusive use shipments must be sufficient so that, when followed, they will cause the carrier to avoid actions that will unnecessarily delay delivery or unnecessarily result in

increased radiation levels or radiation exposures to transport workers or members of the general public; and

13. A package must be prepared for transport so that in still air at thirty-eight degrees Celsius [100 degrees Fahrenheit] and in the shade, no accessible surface of a package would have a temperature exceeding fifty degrees Celsius [122 degrees Fahrenheit] in a nonexclusive use shipment or eighty-two degrees Celsius [180 degrees Fahrenheit] in an exclusive use shipment. Accessible package surface temperatures may not exceed these limits at any time during transportation.

History: Effective June 1, 1992; amended effective July 1, 1995; May 1, 1998; March 1, 2003.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-16. Air transport of plutonium.

1. Notwithstanding the provisions of any general licenses and notwithstanding any exemptions stated directly in this chapter or included indirectly by citation of the United States department of transportation regulations, as may be applicable, the licensee shall assure that plutonium in any form is not transported by air, or delivered to a carrier for air transport, unless:

   a. The plutonium is contained in a medical device designed for individual human application;

   b. The plutonium is contained in a material in which the specific activity is not greater than seventy becquerels per gram [0.002 microcuries per gram] of material and in which the radioactivity is essentially uniformly distributed;

   c. The plutonium is shipped in a single package containing no more than an A_2 quantity of plutonium in any isotope or form and is shipped in accordance with section 33-10-13-05; or

   d. The plutonium is shipped in a package specifically authorized for the shipment of plutonium by air in the certificate of compliance for that package issued by the United States nuclear regulatory commission.

2. Nothing in subsection 1 is to be interpreted as removing or diminishing the requirements of section 33-10-13-11.

3. For a shipment of plutonium by air which is subject to subdivision d of subsection 1, the licensee shall, through special arrangement with the

carrier, require compliance with 49 CFR 175.704, as applicable to the air transport of plutonium.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-04, 28-32-02

33-10-13-17. Shipment records. Each licensee shall maintain for a period of two years after shipment a record of each shipment of licensed material not exempt under section 33-10-13-04, showing, where applicable:

1. Identification of the packaging by model number;

2. Verification that there were no significant defects in the packaging, as shipped;

3. Volume and identification of coolant;

4. Type and quantity of licensed material in each package, and the total quantity of each shipment;

5. Date of the shipment;

6. Name and address of the transferee;

7. Address to which the shipment was made; and

8. Results of the determinations required by section 33-10-13-15.

History: Effective June 1, 1992.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-18. Reports. The licensee shall report to the department within thirty days:

1. Any instance in which there is significant reduction in the effectiveness of any authorized packaging during use; and

2. Details of any defects with safety significance in the packaging after first use, with the means employed to repair the defects and prevent their recurrence.

3. Instances in which the conditions of approval in the certificate of compliance were not observed in making a shipment.

History: Effective June 1, 1992; amended effective May 1, 1998.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-19. Advance notification of shipment of irradiated reactor fuel and nuclear waste.

1. As specified in subsections 2, 3, and 4, each licensee shall provide advance notification to the governor of a state, or the governor's designee, of the shipment of licensed material through, or across the boundary of the state, before the transport, or delivery to a carrier, for transport of licensed material outside the confines of the licensee's plant or other place of use or storage.

2. Advance notification is required under this section for shipments of irradiated reactor fuel in quantities less than that subject to advance notification requirements of 10 CFR 73.37(f). Advance notification is also required under this section for shipment of licensed material, other than irradiated fuel, meeting the following three conditions:

   a. The licensed material is required by this chapter to be in type B packaging for transportation;

   b. The licensed material is being transported to or across a state boundary en route to a disposal facility or to a collection point for transport to a disposal facility; and

   c. The quantity of licensed material in a single package exceeds the least of the following:

      (1) Three thousand times the A_1 value of the radionuclides as specified in appendix A, for special form radioactive material;

      (2) Three thousand times the A_2value of the radionuclides as specified in appendix A, for normal form radioactive material; or

      (3) One thousand terabecquerels [27000 curies].

3. Procedures for submitting advance notification.

   a. The notification must be made in writing to the office of each appropriate governor or governor's designee and to the administrator of the appropriate United States nuclear regulatory commission regional office listed in appendix A to 10 CFR part 73.

   b. A notification delivered by mail must be postmarked at least seven days before the beginning of the seven-day period during which departure of the shipment is estimated to occur.

   c. A notification delivered by messenger must reach the office of the governor or of the governor's designee at least four days before

the beginning of the seven-day period during which departure of the shipment is estimated to occur.

(1) A list of the names and mailing addresses of the governors' designees receiving advance notification of transportation of nuclear waste was published in the federal register on June 30, 1995 [60 FR 34306].

(2) The list will be published annually in the federal register on or about June 30 to reflect any changes in information.

(3) A list of the names and mailing addresses of the governors' designees is available on request from the director, office of state programs, United States nuclear regulatory commission, Washington, D.C. 20555-0001.

d. The licensee shall retain a copy of the notification as a record for three years.

4. Information to be furnished in advance notification of shipment. Each advance notification of shipment of irradiated reactor fuel or nuclear waste must contain the following information:

a. The name, address, and telephone number of the shipper, carrier, and receiver of the irradiated reactor fuel or nuclear waste shipment;

b. A description of the irradiated reactor fuel or nuclear waste contained in the shipment, as specified in the regulations of the United States department of transportation in 49 CFR 172.202 and 172.203(d);

c. The point of origin of the shipment and the seven-day period during which departure of the shipment is estimated to occur;

d. The seven-day period during which arrival of the shipment at state boundaries is estimated to occur;

e. The destination of the shipment and the seven-day period during which arrival of the shipment is estimated to occur; and

f. A point of contact, with a telephone number, for current shipment information.

5. Revision notice. A licensee who finds that schedule information previously furnished to a governor or governor's designee, in accordance with this section, will not be met shall telephone a responsible individual in the office of the governor of the state or of the governor's designee and inform that individual of the extent of the delay

beyond the schedule originally reported. The licensee shall maintain a record of the name of the individual contacted for three years.

6. Cancellation notice.

   a. Each licensee who cancels an irradiated reactor fuel or nuclear waste shipment for which advance notification has been sent shall send a cancellation notice to the governor of each state or to the governor's designee previously notified, and to the administrator of the appropriate United States nuclear regulatory commission regional office listed in appendix A of 10 CFR part 73.

   b. The licensee shall state in the notice that it is a cancellation and identify the advance notification that is being canceled. The licensee shall retain a copy of the notice as a record for three years.

History: Effective June 1, 1992; amended effective May 1, 1998; March 1, 2003.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-20. Quality assurance requirements. Repealed effective May 1, 1998.

33-10-13-21. Completeness and accuracy of information.

1. Information provided to the department by an applicant for a license, or by a licensee, or information required by statute or by article 33-10, orders, or license conditions to be maintained by the applicant or the licensee must be complete and accurate in all material respects.

2. Each applicant or licensee shall notify the department of information identified by the applicant or licensee as having, for the regulated activity, a significant implication for public health and safety or common defense and security. An applicant or licensee violates this requirement only if the applicant or licensee fails to notify the department of information that the applicant or licensee has identified as having a significant implication for public health and safety or common defense and security. Notification must be provided to the department within two working days of identifying the information. This requirement is not applicable to information that is already required to be provided to the department by other reporting or updating requirements.

History: Effective March 1, 2003.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

33-10-13-22. Deliberate misconduct.

1. This section applies to any:

   a. Licensee;

   b. Certificate holder;

   c. Quality assurance program approval holder;

   d. Applicant for a license, certificate, or quality assurance program approval;

   e. Contractor (including a supplier or consultant) or subcontractor, to any person identified in subdivisions a through d; or

   f. Employee of any person identified in subdivisions a through e.

2. A person identified in subsection 1 who knowingly provides to any entity, listed in subdivisions a through f of subsection 1 any components, materials, or other goods or services that relate to a licensee's, certificate holder's, quality assurance program approval holder's or applicant's activities subject to article 33-10 may not:

   a. Engage in deliberate misconduct that causes or would have caused, if not detected, a licensee, certificate holder, quality assurance program approval holder, or any applicant to be in violation of any rule, regulation, or order, or any term, condition, or limitation of any license, certificate or approval issued by the department; or

   b. Deliberately submit to the department, a licensee, a certificate holder, quality assurance program approved holder, an applicant for a license, certificate, or quality assurance program approval, or a licensee's, applicant's, certificate holder's, or quality assurance program approval holder's contractor or subcontractor, information that the person submitting the information knows to be incomplete or inaccurate in some respect material to the department.

3. A person who violates subsection 2 may be subject to enforcement action.

4. For the purposes of subdivision a of subsection 2, deliberate misconduct by a person means an intentional act or omission that the person knows:

   a. Would cause a licensee, certificate holder, quality assurance program approval holder, or applicant for a license, certificate, or quality assurance program approval to be in violation of any rule,

regulation, or order, or any term, condition, or limitation, of any license or certificate issued by the department; or

b. Constitutes a violation of a requirement, procedure, instruction, contract, purchase order, or policy of a licensee, certificate holder, quality assurance program approval holder, applicant, or the contractor or subcontractor of any of them.

History: Effective March 1, 2003.
General Authority: NDCC 23-20.1-04, 28-32-02
Law Implemented: NDCC 23-20.1-03, 23-20.1-04, 28-32-02

APPENDIX A
DETERMINATION OF A_1 and A_2

1. Values of A_1 and A_2 for individual radionuclides, which are the bases for many activity limits elsewhere in these rules are given in Table I. The curie (Ci) values specified are obtained by converting from the Terabecquerel (TBq) figure. The curie values are expressed to three significant figures to assure that the difference in the TBq and Ci quantities is one-tenth of one percent or less. Where values of A_1 or A_2 are unlimited, it is for radiation control purposes only. For nuclear criticality safety, some materials are subject to controls placed on fissile material.

2. For individual radionuclides whose identities are known, but which are not listed in Table I, the determination of the values of A_1 and A_2 requires department approval, except that the values of A_1 and A_2 in Table II may be used without obtaining department approval.

3. In the calculations of A_1 and A_2 for a radionuclide not in Table I, a single radioactive decay chain, in which radionuclides are present in their naturally occurring proportions, and in which no daughter nuclide has a half-life either longer than ten days, or longer than that of the parent nuclide, shall be considered as a single radionuclide, and the activity to be taken into account, and the A_1 or A_2 value to be applied shall be those corresponding to the parent nuclide of that chain. In the case of radioactive decay chains in which any daughter nuclide has a half-life either longer than ten days, or greater than that of the parent nuclide, the parent and those daughter nuclides shall be considered as mixtures of different nuclides.

4. For mixtures of radionuclides whose identities and respective activities are known, the following conditions apply:

   a. For special form radioactive material, the maximum quantity transported in a Type A package:

$$\sum_I \frac{B(i)}{A_1(i)} \leq 1$$

   Where B(i) is the activity of radionuclude I and A_1(i) is the A_1 value for radionuclide I.

   b. For normal form radioactive material, the maximum quantity transported in a Type A package:

$$\sum_{I} \frac{B(i)}{A_2(i)} \leq 1$$

Where B(i) is the activity of radionuclide I and $A_2(i)$ is the A_2 value for radionuclide I.

c. An A_1 value for mixtures of special form material may be determined as follows:

$$A_1 \text{ for mixture} = \frac{1}{\sum_{I} \frac{f(i)}{A_1(i)}}$$

Where f(i) is the fraction of activity of nuclide I in the mixture and $A_1(i)$ is the appropriate A_1 value for nuclide I.

d. An A_2 value for mixtures of normal form material may be determined as follows:

$$A_2 \text{ for mixture} = \frac{1}{\sum_{I} \frac{f(i)}{A_2(i)}}$$

Where f(i) is the fraction of activity of nuclide I in the mixture and A_2 (i) is the appropriate A_2 value for nuclide I.

5. When the identity of each radionuclide is known, but the individual activities of some of the radionuclides are not known, the radionuclides may be grouped and the lowest A_1 or A_2 value, as appropriate, for the radionuclides in each group may be used in applying the formulas in subsection 4. Groups may be based on the total alpha activity and the total beta/gamma activity when these are known, using the lowest A_1 or A_2 values for the alpha emitters and beta/gamma emitters.

History: Effective June 1, 1992; amended effective May 1, 1998; March 1, 2003.
General Authority: NDCC 28-32-02
Law Implemented: NDCC 28-32-02

TABLE I

Table I, Table II, and Table III cannot be accurately reproduced for publication. Users should contact the State Department of Health to obtain a correct copy.